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ABSTRACT

The program goals and objectives for Kindergarten mathematics readiness in Aurora City Schools are listed and described. Consideration of Kindergarten Philosophy, the diverse population of students, the organizational design of adopted textbooks, child development and learning styles, are all assessed in establishing scope and sequence. The Kindergarten Mathematics Program is designed to incorporate the following facets: concrete or "hands-on" experiences for pupils; concept and language development for large group presentations; workbook activities; additional approaches for children with special learning difficulties; and materials for additional reinforcement or enrichment. The expected mathematical vocabulary and instructional objectives are listed. Detailed information for each objective given include the skills each child will master, affective and cognitive objectives, teacher and student resources, pupil activities, and evaluation methods. This document concludes with a listing of texts and materials recommended by the Kindergarten Math Adoption Committee in June 1979. (MP)

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AURORA CITY SCHOOLS

KINDERGARTEN

MATH READINESS

COURSE OF STUDY

SE 032 763

KINDERGARTEN

COURSE OF STUDY

COMMITTEES MEMBERS:

1977-78	Dr. Roy Cogar, Curriculum Coordinator
	Shirley Duval, Chairperson
	Clara Griffin
	Barbara Prough
1978-79	Linda Robertson, Chairperson
	Shirley Duval
	Clara Griffin
	Barbara Prough
	Blicia Jimenez
	Barbara Oswick, Parent
1979-80	Linda Robertson, Chairperson
	Shirley Duval
	Barbara Prough
	Pat Cawrse

Dr. Roy Cogar
Assistant Superintendent
for Instruction
Aurora City Schools

Dr. Larry Lorton
Superintendent
Aurora City Schools
Aurora, Ohio 44202

Linda Robertson
Principal
Miller School
646 S. Chillicothe Road
Aurora, Ohio 44202

AURORA CITY SCHOOLS

KINDERGARTEN

MATHEMATICS READINESS

PROGRAM GOALS AND OBJECTIVES

Mathematics

The real, concrete, sensory world is the primary basis for providing kindergarten children with mathematical concepts. "Multisensory approaches, game playing and the use of manipulative materials are the most important features of an appropriate mathematics curriculum.."

Children explore at their own level relationships of quantity, measurement, and properties through varied activities. Development of math concepts occur daily as an integral part of the total kindergarten program.

MATHEMATICS

PROGRAM GOALS AND OBJECTIVES

Kindergarten

Activities

I. The child will begin to develop a basic mathematical vocabulary.

The following vocabulary will be utilized during the on going activities throughout the day. The teacher will use the following terms but should not expect the children to define them or to use them.

above - below
alike, different
as many as; not as many
beside
between
big
bigger
biggest
greatest
greater than; more than
less tham
heavy
heavier
heaviest
high
higher
highest
horizontal
vertical
inside-outside
littlest, biggest
long
longer
longest
short
shorter
shortest
low
lower
lowest
more, less
narrow, wide
far, farthest
length
height
width
whole, a part of
half

bottom, top
inexpensive, cheap, expensive
circle
square
triangle
rectangle (oblong,
diamond
oval
count
thin, thick
empty set
equal or equivalent set
fewer
fewer than
fewest
great
greater
large
larger
largest
first, next, last
most
least
lesser
light, lighter, lightest
little
most, more
number
numeral
near, far
one more
on the right of
on the left of
over, under
ring
penny, cent
nickel
dime
quarter
half-dollar
dollar

II. The child will understand basic concepts in numeration.

A. The child will:

1. Understand the concept of 1 to 1 correspondence
2. be able to rote count from 0-20
3. be able to count objects meaningfully 0-10
4. be able to recognize the numerals 0-12
5. be able to reproduce from a pattern numerals 0-9
6. be able to understand concept of position: first, second, and third
7. be exposed to the numeral (5), number and number word (five)
8. be able to order sets and numerals (0-10)
9. be introduced to charts and/or graphs
10. be exposed to counting by 2's, 5's and 10's

III. The child will recognize basic geometric shapes.

The child will:

1. Recognize the following geometric shapes - circle, rectangle, square, triangle, oval, and diamond.
2. be able to reproduce from a pattern- circle, rectangle, square, triangle, and oval
3. be able to draw curved and straight lines
4. understand the concept of curved and straight lines

IV. The child will develop concepts of qualitive relationship.

The child will:

1. identify the number of objects in a set
2. develop an awareness of an empty set and an awareness of 0 as the numeral of the set
3. be able to understand concept of one more, one less
4. understand the concepts of comparisons: greater than, less than or equal to
5. develop an awareness of the concepts of addition and subtraction in concrete ways
6. be introduced to words such as half and quarter

V. The child will develop concepts of quantitative relationship.

The child will:

1. be able to make comparison of size and weight
   heavy, light
   big, little
   thick, thin
   tall, short
   larger, smaller, same
   full, empty
   more, less
   long, short

2. begin to develop concepts of time
   yesterday
   tomorrow
   day
   week
   months
   year

3. identify penny, nickel, dime, quarter and dollar bill

AURORA CITY SCHOOLS

SCOPE AND SEQUENCE CHART

KINDERGARTEN
MATHEMATICS

This chart is to be used for organizing the scope, knowledge and skill objectives, and indicating sequence or the levels at which an objective is introduced, maintained, etc.

KEY

I : Introduce-the initial phase of study which will lead to further study.
F : Focus-intense concentration.
M : Maintain-continuing study.
E : Experiences provided-an isolated exposure which may lead to further study.

KNOWLEDGE AND SKILLS	1st Semester	2nd Semester
II. The child will understand basic concepts in numeration.		
1. 1 to 1 correspondence	F	M
2. rote count from 0-20	I	F
3. count objects 0-10	I	F
4. recognize numerals 0-12	I	F
5. reproduce numerals 0-9	I	F
6. first, second, third	I	F
7. numeral number and numeral word	I	F
8. order sets and numerals	I	F
9. charts and graphs	I	F
10. 2's, 5's and 10's		I
III. The child will recognize basic geometric shapes.		
1. recognize circle, rectangle, square, triangle, oval and diamond	I	F
2. reproduce circle, rectangle, square, triangle, and oval	I	F
3. draw curved and straight lines	F	M
4. Concept of curved and straight lines	F	M

IV.	The child will develop concepts of qualitative relationships.		
	1. number of objects in a set	I	F
	2. empty set 0	E	I
	3. one more, one less	I	F
	4. greater than, less than or equal to	I	F
	5. addition and subtraction	I	F
	6. parts of the whole	E	I
V.	The child will develop concepts of quantitative relationship.		
	1. make comparisons of size and weight	I	F
	2. begin to develop concepts of time	I	I
	3. penny, nickel, dime, quarter, and dollar bill	E	I

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

1.1 Affective Objective(s)

The child will begin to appreciate the importance of numbers in the world around him.

1.2 Cognitive Objective - The child will understand the concept of 1 to 1 correspondence.

1.21 Teacher Resources

1.211 - MacMillan Charts, 18
1.212 - Heath Teacher's Manual T17, 3, 4
1.213 - Heath Manipulative Kit 28, 32
1.214 - Hoffman Viewer 303-22
1.215 - Flannel Board, Numbers, flannel objects

1.22 Student Resources

1.221 - Heath Workbooks, crayons
1.222 - Hoffman viewer worksheets, crayons
1.223 - Dominoes
1.224 - Candyland
1.225 - Paper, Crayons

1.23 Activities

1.231 - Students will play dominoes matching like sets to establish 1 to 1 correspondence.
1.232 - Students will put up equal number of flannel objects to match teacher's set
1.233 - Students will complete successfully Heath workbook pg. 3-4.
1.234 - Students will put correct number of objects in a circle on paper and match that with similiar objects outside circle.

1.24 Evaluation

1.241 - Students will be able to match teachers' number of farm animals with correct number of zoo animals.
1.242 - Students will be able to decide how many straws are necessary for the number of students at their table during snack time.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts of numeration.

2.1 Affective Objective(s)

The child will become aware of numbers in sequence from 0-20 and to appreciate their importance in everyday situations.

2.2 Cognitive Objective - The child will be able to rote count 0-20

2.21 Teacher Resources

2.211 MacMillan Charts - pg. 31
2.212 Heath Manipulative Kit pg. 32
2.213 Heath Teachers Manual T-19, T20, 3 & 4
2.214 Hoffman Viewer 305-44
2.215 Blocks, Sticks, straws, papers, books any concrete objects - Abacus - Calendar - games.

2.22 Student Resources

2.221 Abacus
2.222 Number Cards, Pictures, Charts
2.223 Chutes and Ladder Game
2.224 Magnetic counting objects to use on blackboard
2.225 Monthly Calendar
2.226 Fingerplays and Songs

2.23 Activities

2.231 Students will count chairs in classroom from 0-20
2.232 Students will count beads on abacus
2.233 Students will count the number of steps it takes to go from one place to another.
2.234 Students will count using a Lets Count to 100 Chart.
2.235 Students will count as they hop on one foot.

2.24 Evaluation

2.241 Student will be able to count outloud, for the teacher, from 0-20
2.242 Students will be able to count using the abacus 0-20.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

3.1 Affective Objective(s)

The child will begin to see the importance of counting objects in his everyday surroundings.

3.2 Cognitive Objective - The child will be able to count objects meaningfully 0-10.

3.21 Teacher Resources

3.211 Heath Manipulative Kit Pg. 8 & 67
3.212 MacMillan Charts 18-22 - 26-30
3.213 Heath Teachers Manual 19-20
3.214 Hoffman Viewer Unit 305-44
3.215 Workjobs I and II by Lorton
3.216 MacMillan Read & Tell I & II - see Index

3.22 Student Resources

3.221 Playhouse equipment - cups, saucers, plates, knives, forks, spoons, etc.
3.222 Heath Workbook - Crayons Pg. 3-4-6
3.223 Teacher made Workjobs
3.224 MacMillan Charts 26-30
3.225 D.L.M. Sorting Box
3.226 Any & all objects child comes in contact with - games

3.23 Activities

3.231 Students will count dishes, cups and silverware to set a table.
3.232 Students will complete pgs. 3-4-6 in Heath Workbook
3.233 Students will count out enough carrots to match numeral on rabbits hat. (Workjob)
3.234 Student will count boys and girls in class.
3.235 Students will count out enough milk for boys and girls in classroom.

3.24 Evaluation

3.241 Students will be able to count objects to match number given by the teacher 0-10.
3.242 Students will be able to place apples on tree until the amount matches numeral on tree.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

4.1 Affective Objective(s)

The child will be aware of the importance in using numerals as a symbol of the number of objects.

4.2 Cognitive Objective - The child will be able to recognize numerals 0-12.

4.21 Teacher Resources

4.211 Heath Manipulative Kit Pg. 51
4.212 MacMillan Charts 18-22
4.213 Hoffman Viewer 304-31, 304-32, 305-44
4.214 MacMillan Read & Tell I 50-51, 126
4.215 Teacher Made Workjobs
4.216 Heath Teacher Manual Units 4 and 6

4.22 Student Resources

4.221 Heath Workbooks pg. 4-6
4.222 Game - "Which Flow, Please"
4.223 Find Dot to Dots
4.224 Go Fish Game - number cards
4.225 Wooden numerals - 3 dimensional
4.226 Number tower, Number worm puzzles

4.23 Activities

4.231 Students will successfully complete pgs. 4 and 6 in Heath Workbooks.
4.232 Students will find a numeral card to match numeral card held by teacher.
4.233 Students will do dot to dot pictures following numerals.
4.234 Students will roll a ball at numbered tubes and read the numbers on tubes knocked down.
4.235 Students will cut out numerals from magazines and papers and paste the ones that are the same together.

4.24 Evaluation

4.241 Students will be able to point to the correct number when the teacher asks.
4.242 Students will be able to walk on number line to a given numeral.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

5.1 Affective Objective(s)

The child will become aware of the use of numerals as the symbol for the number of objects.

5.2 Cognitive Objective - The child will be able to reproduce numerals 0-9.

5.21 Teacher Resources

5.211 Heath Teachers Manual Unit 8
5.212 Chalkboard & Chalk
5.213 MacMillan Do It Yourself I pg. 7
5.214 Numerals made out of sandpaper and fur, etc.
5.215 Yarn - Glue - Pipecleaners.

5.22 Student Resources

5.221 Heath Workbooks pgs. 103-122
5.222 Tracing Paper & Crayons, pencils
5.223 Finger paints
5.224 Trend Wipe Offs
5.225 Number Stencils
5.226 Chalk & Chalkboard

5.23 Activities

5.231 Students will use tracing paper over teachers numerals to practice writing numerals
5.232 Students will write numerals using finger paints
5.233 Students will form numerals using pipe cleaners
5.234 Students will trace dotted line numerals using Trend Wipe Offs.
5.235 Students will make numerals using glue and glitter

5.24 Evaluation

5.241 Students will be able to write numerals on pages in their number books.
5.242 Students will be able to write in the missing number on a ditto sheet, or Trend Wipe Offs.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal

6.1 Affective Objective(s)

The child will be aware of relative positions of people and objects in their environment.

6.2 Cognitive Objective- The child will be able to express order through the use of ordinal concepts first-second-third

6.21 Teacher Resources

6.211 MacMillan Charts Lesson 14
6.212 Heath T-21, 47 & 48
6.213 Hoffman 301-302
6.214 MacMillan Read & Tell II pg. 84
6.215 Monthly Calendar
6.216 Fingerplay

6.22 Student Resources

6.221 Manipulatives from Heath Kit
6.222 Heath Workbooks & Crayons
6.223 Puzzle
6.224 Footprints with numbers & sets on them
6.225 Fingerplays - 5 Little Pumpkins
5 Little Squirrels

6.23 Activities

6.231 Students will successfully complete pgs. 47 and 48 in Heath Workbook.
6.232 Students will identify their place in line.
6.233 Students will place pictures of a story in order.
6.234 Students will fold paper to make rows or columns and will then number them 1st, 2nd, 3rd, etc.
6.235 Students will draw a number card, walk to it on number line and then tell the ordinal position of where they are on the line.

6.24 Evaluation

2.641 Students will be able to tell the ordinal position of objects in pictures or on flannel board.
2.642 Students will be able to tell their first second and last names.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

7.1 Affective Objective(s)

The child will begin to appreciate how numerals, sets and number words are interrelated and how they can be used in their activities.

7.2 Cognitive Objective - The child will be able to relate numeral number and number word.

7.21 Teacher Resources

7.211 MacMillan Charts Lessons 18-22, 26, 30
7.212 Heath Unit 8
7.213 Flannel Board, Flannel objects and word cards
7.214 Workjobs I and II - teacher made number - set word wheel.
7.215 Bulletin Boards - shwoing numerals matched to set and number word.

7.22 Student Resources

7.221 Trend Wipe Offs
7.222 Student Made Number Books
7.223 Heath Workbooks, Pencils and Crayons Pg. 103-122
7.224 Puzzles - Safari
7.225 Numeral, set and number word chart.

7.23 Activities

7.231 Students will match number word to teacher's set and/ or numeral.
7.232 Students will make a Number Book 1-10 showing numeral, set and number word.
7.233 Students will complete puzzle matching set-numeral and number word.
7.234 Students will successfully complete Pages in Unit 8 of their Heath Workbooks.

7.24 Evaluation

7.241 Students will be able to match numeral, number word and set as requested by teacher.
7.242 Students will be able to draw a set of objects to match numeral and/or number word.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration

8.1 Affective Objective(s)

The child will see the importance of numbers and sequencing as it affects their activities.

8.2 Cognitive Objective - The child will be able to understand order, sets and numerals.

8.21 Teacher Resources

8.211 MacMillan Charts 25, & 31
8.212 Heath Unit 4
8.213 Hoffman 302-12 and 302-13
8.214 Bulletin Boards
8.215 Workjobs I & II by Lorten
8.216 Teacher made ditto sheets

8.22 Student Resources

8.221 Heath Manipulative Kit
8.222 Trend-wipe offs
8.223 Heath Workbooks Pg. 31-50 and 71-88
8.224 Flannel Board, numerals and objects
8.225 Paper - Crayon, chalkboard, chalk.

8.23 Activities

8.231 Students will make sets and match them to numeral cards.
8.232 Students will count how many are in a set and then choose numeral that tells how many.
8.233 Students will make Number Books showing sets 1-10 in order with the numerals also included.
8.234 Students will place set cards and/or numeral cards in order 1-10.
8.235

8.24 Evaluation

8.241 Students will be able to place footprints, with sets and numerals on them in correct order on floor.
8.242 Students will be able to cut out sets and paste them in order from 1 through 10.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

9.1 Affective Objective(s)

The child will begin to appreciate the importance of charts and graphs in their environment.

9.2 Cognitive Objective - The child will be able to interpret in his own words the use and needs for charts and graphs.

9.21 Teacher Resources

9.211 MacMillan Charts 15
9.212 Heath Readiness Units
9.213 Teacher made materials & bulletin boards

9.22 Student Resources

9.221 Graph Paper - Crayons
9.222 Number Chart 1-100
9.223 Weather Chart used daily
9.224 Attendance Chart used daily
9.225

9.23 Activities

9.231 Students will count and make a graph that shows how many blue, green, brown and black eyed children are in their class.
9.232 Students will make their own Weather Charts.
9.233 Students will make a one more Number graph using numbers 1 through 10.
9.234 Students will make a graph showing how many children drink chocolate milk and white milk.

9.24 Evaluation

9.241 Students will be able to tell how many rainy days there have been in a month by reading a weather graph.
9.242 Students will be able to tell from looking at a chart how many boys and girls are absent.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

II. Goal - The child will understand basic concepts in numeration.

10.1 Affective Objective(s)

The child will become aware of a different numeration system. They will also appreciate how counting by 2's, 5's and 10's can help you count objects faster.

10.2 Cognitive Objective

The child will be exposed to counting by 2's, 5's and 10's.

10.21 Teacher Resources

10.211 Since we are only exposing the children to this form of counting we do not have many teacher resources.
10.212 Teacher made charts
10.213 Teachers example in classroom situations.

10.22 Student Resources

10.221 Using Abacus
10.222 Counting Chart that is color coded to show numbers involved in counting by 2's, 5's and 10's

10.23 Activities

10.231 Students will practice counting as they move sets of 5 or 10 beads on Abacus.
10.232 Students will count outloud as they follow counting chart.

10.24 Evaluation

10.241 Students will be able to count with teacher as they look at a number chart.

III. Goal: The child will recognize basic geometric shapes.

1.1 Affective Objective(s) - The child will develop an awareness of shape and line in everyday life.

1.2 Cognitive Objective - The child will recognize circle, rectangle, square, triangle, oval and diamond.

1.2 Teacher Resources

1.211 Heath Manipulative Kit 7,12-13, 14-15

1.212 MacMillan Charts 7, 8, 9, 11

1.213 Heath Workbook T12, T23, T24, 2, 5

1.214 Hoffman Unit 301-08, 302-15, 302-16, 303-39

1.215 Hap Palmer - "Act and Do" Record

1.22 Student Resources

1.221 Heath Workbook, crayons

1.222 Hoffman Worksheets, crayons

1.223 Shape Bingo cards

1.224 Paper, Pencil

1.225 Construction paper in various shapes, paste

1.23 Activities: Twister

1.231-Students will follow Hap Palmer record and move in and out of various shapes painted on floor

1.232-Students will paste various shapes on paper to form design and identify each shape by name

1.233-Students will play Shape Bingo by both calling name and showing shape.

1.234-Students will color various shapes according to color named by teacher.

1.235

1.24 Evaluation

1.241 Students will point to shape as the teacher names it.

1.242 Student will successfully stand on floor patterns as teacher calls out shape name.

III. Goal: The child will recognize basic geometric shapes.

2.1 Affective Objective(s) - The child will develop an awareness that shapes form letters, objects and pictures in everyday life.

2.2 Cognitive Objective - The child will reproduce circle, triangle, rectangle, square, oval.

2.21 Teacher Resources

2.211 MacMillan Read and Tell I, teacher manual, page 15,16,17,18,23,33

2.212 MacMillan Read and Tell II, teachers manual, pg. 11

2.213 Beginning Pictures and Patterns, Frostig Ditto 6,7,8,9,14,25,26,96

2.214 Intermediate Frostig Ditto 15, 16, 20, 38

2.215 MacMillan Math Chart 8,9,10,11,12 - Crayon

2.22 Student Resources

2.221 Frostig Worksheets I (Beginning) 6,7,8,9,14,25,26,96 and II Intermediate 15,16,20,38

2.222 Finger paints, tempra paints, pencils, crayons

2.223 Templates, jars, lids, blocks, dice, buttons, yarn, string, clay

2.224 Pegs, pegboard, chalkboard

2.225 "Do it Yourself", pg. 1 in MacMillan Reading

2.226 Construction paper, scissors, paste

2.23 Activities

2.231 Students will trace around jars, lids, buttons, attribute logic blocks as named by teacher.

2.232 Students will finger paint and tempra paint, painting shapes

2.233 Students will trace shape templates to reproduce shapes as introduced by teacher

2.234 Students will cut out cookie dough in the 5 basic shapes, bake, and then eat.

III. Goal: The child will recognize basic geometric shapes.

3.1 Affective Objective(s) - The child will develop an awareness that curve and straight lines make up all shapes, letters.....

3.2 Cognitive Objective - The child will be able to draw straight and curved lines.

3.21 Teacher Resources

3.211 Frostig Manual Beginner - pg. 27 Ex. 31,32,33 pg. 28 Ex. 45,46,47,48 - pg. 30,59,60,61

3.212 Frostig Manual Int: pg. 56 Ex. 2 - pg. 61 Ex. 18, pg. 62,63 Ex. 24,29 - pg. 66 Ex. 48 - pg. 72 Ex. 80 pg. 75 - Ex 95

3.213 Chalkboard, Chalk

3.214 MacMillan Chart; Math Chart #6,7,8,9,11: Crayon

3.215

3.22 Student Resources

3.221 Frostig Worksheet I - Worksheet 31,32,33,4,5,46, 47, 48,59,60,61

3.222 Frostig Worksheet II - Worksheet 2,18,24,29,48,80,95

3.223 Trend - Follow the Path

3.224 D.L.M. Eye Hand Integration Exercises

3.225 Crayons, pencil, chalkboard, chalk, paper, paint, brush

3.23 Activities

3.231 Students will manipulate rolled clay into straight lines and curved lines

3.232 Students will make draw a series of straight and curved lines to form a collage then color in.

3.233 Students will use yarn or string to form lines (both curved and straight) on flannelboard.

3.234 Students will paint straight and curved lines on paint paper as introduced.

3.235

3.24 Evaluation

3.241 When called upon, the child will be able to draw a straight and/or curved line on chalkboard.

3.242 A child will be able to finger paint a straight line and a curved line on finger paint paper.

III. Goal: The child will recognize basic geometric shapes.

4.1 Affective Objective(s) - The child will develop an awareness of curved and straight lines in everyday life.

4.2 Cognitive Objective - The child will understand the concept of curved and straight lines.

4.211 Teacher Resources

4.211 Heath Manipulative Kit pg. 10,11

4.212 Hoffman Manual Unit 302-15, 303-30, 301-06, 303-30

4.213 MacMillan Read and Tell Teacher's Manual pg. 15,22,17

4.214 Heath Math Teacher's Guide pg. 58 (Follow-Up)

4.215 Frostig Teacher's Guide pg. 23- Ex 1,2,3,4 - pg. 27 Ex 32

4.216 Chalkboard, Chalk

4.221 Student Resources

4.221 Heath Manipulative Ditto Worksheet pg. 11, Crayons

4.222 Hoffman Viewer "Discover and Do" #301-06,302-15, 303-30 Pencil

4.223 Frostig Beginning Worksheet Ditto 1,2,3,4,31,32 Pencil

4.224 Crayons, Pencil, Construction Paper, scissors

4.225 Marbles, Wheels, Ropes, Blocks, Balls

4.23 Activities

4.231 Child will manipulate an assortment of noodles and cereals to distinguish curved and straight lines. They will then categorize.

4.232 Children will visit the gym and then be instructed by teacher to walk on/or jump over curved lines and then straight lines.

4.233 Students will form straight lines and curved lines with jump ropes when named by teacher..

4.234 Students will form straight and curved lines with their bodies when called out.

4.24 Evaluation

4.241 Given a drawn line on chalkboard, the child will name whatever it is straight or curved.

4.242 When called upon to find a straight or curved line object, the child will be able to point to an object in the room.

4.243 The student will successfully step on a straight line or curved line marked on floor when called out by teacher.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of quantitative relationships.

1.1 Affective Objective

1.11 The child will develop the awareness that some sets have a common number property and these number properties each have a name.

1.12 The child will be exposed to the idea that the number of a set is not changed by its arrangement or the variety of objects in it.

1.13 The child will begin to realize the importance of associating a number name with a number property in order to function in his environment and meet his needs.

1.2 Cognitive Objectives

1.21 The child will be able to identify the number of objects in a set.

1.22 The child will explore the idea that the arrangement of the elements in a set does not change its number property.

1.23 The child will understand the idea that a set can be made up of a variety of objects without changing its number property.

1.24 The child will use the appropriate vocabulary for the number properties.

1.211 Teacher Resources

1.2111 Heath Manipulative Kit 8,28,32,67

1.2112 MacMillan Charts Guide 18-30, 19-32

1.2113 Heath Teachers Manual T19, T20, 31

1.2114 Hoffman Viewer

1.2115 Workjobs Manual

1.2116 Flannel Board & Cutouts

1.2117 Students & objects in class environment

1.212 Student Resources

1.2121 Heath Kit Attribute Blocks

1.2122 Heath Workbook pgs. 50, 71-88

1.2123 Heath Enrichment Sheets

1.2124 Hoffman Viewer 305-42, 44 & 47
303-21, 23-30, 32,36,38

1.2125 Workjobs

1.2126 Hap Palmer Records "Math Readiness"

1.2127 McMillan Charts

1.2128 DLM Number Sorting Box

1.2129 Colored Inch Cubes, Beads, String, Pegs & Pegboard

1.2130 Sort-A-Tray

1.2131 Books about sets

1.2132 Objects in Classroom - Magazines

1.213 Activities

1.2131 Student will spin the arrow on a circular wheel divided into 8 sections with a different number of circles in each section. He will say the number of the set the spinner has stopped on.

1.2132 Students will play "Set Bingo". One child will call out a number and the other children will cover all the sets with that number on their card. The first child to cover his whole card with markers is the winner. He then becomes the "caller".

1.2133 Teacher will set up sets of three characters from stories such as "Three Bears", Three Billy Goats Gruff", "Three Little Pigs" etc. on Flannel board, and several sets of 4, and 5 things. Students will string with yarn all the sets of three.

1.2134 Students will sort cards by the number value of the set. The sets will have various arrangements of the same object.

1.2135 Students will cut pictures out of a magazine and paste 5 pictures of things they like on a piece of paper.

1.2136 Students will play "Clapping Game". One child claps a number. Children must say the number and then jump, hop or skip, etc. that many times.

1.214 Evaluation

1.2141 Student will make a set of objects and will say correct number for amount of objects in the set.

1.2142 When shown three sets made up of varied objects child will be able to say the number of each set.

1.2143 When given a number verbally child will make a set of that number.

1.2144 Given 3 concrete sets of 5 squares each but arranged close together, for apart and in a number 5 pattern, student will touch each set and tell how many objects in it. He will answer "yes" to the question, Are there still five squares in the set if 2 move them around?

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of quantitative relationships.

2.1 Affective Objectives

2.11 The child will develop an awareness of the concept of an "empty set", as a set containing no elements.

2.12 The child will be exposed to the relationship of the "empty set" to the set of "one" as being one more than zero for the beginning of the ordering of whole numbers.

2.2 Cognitive Objectives

2.21 The child will be able to identify an "empty set".

2.22 The child will recognize the term "zero" as the number of the "empty set". (Zero will not be referred to as the numeral for nothing).

2.211 Teacher Resources

2.2111 Flannel board

2.2112 Chalkboard

2.2113 Multilink blocks

2.2114 Heath Teachers' Guide pgs. 43-46

2.2115 McMillan Charts Teaching Guide pg. 26

2.2116 Hoffman Viewer Guide 304-32-33

2.2117 Hap Palmer Records - MATH READINESS, "Canyon Catch a Set", LEARNING BASIC SKILLS THROUGH MUSIC, "Number March".

2.212 Student Resources

2.2121 Heath Workbook pgs. 43-46

2.2122 Multilink Blocks

2.2123 Hoffman Viewer, 304-32, 33

2.2124 McMillan Charts #24, Empty sets can be found on Charts #18-22

2.2125 Flannelboard, Cutouts, yarn

2.2126 Sorting Set Cards which include an Empty Set

2.213 Activities

2.2131 Student will sort picture cards of sets of 0-5 and place them in the appropriate column on a teacher-made "set Chart".

2.2132 One child will call out a number, 0-4 and ask another child to make a set of this number of objects on the flannelboard.

2.2133 Student will play, "Spin-a-Set". Gameboard and deck of 30 cards with colored sets of 0-5, one spinner divided into sets of 0-5. Child moves along board by moving to next set that matches the one he has spun.

2.2134 Students form a circle. Teacher directs them to stand inside the circle if they are wearing red. A child counts how many children in the set. Teacher then asks all the children with purple ears to stand inside the circle; Then elicits empty set as answer.

2.2135 Students play, "Feed the Squirrel". One paper plate with four acorns on it, one squirrel. Teacher asks how many acorns are on the plate?" Continue until the empty set is left.

2.214 Evaluation

2.2141 When shown on array of sets, the student will touch the empty set.

2.2142 The child will make a set of three, then two, then one and then the empty set upon teacher direction.

2.2143 The student will give the answer, "zero," when teacher points to empty set and asks, "How many things are in this set?"

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of quantitative relationship

3.1 Affective Objective - The child will become aware of the relationship of one more than and one less than as preparation for the natural ordering of whole numbers.

3.2 Cognitive Objectives

3.21 The child will understand the concepts of one more, one less.

3.22 The child will be able to construct a set of one more or one less than a given set.

3.211 Teacher Resources

3.2111 ERC Filmstrips
3.2112 MacMillan Charts Guide, 27-32
3.2113 Hoffman Viewer Guide, 303-26, 303-30, 304-31-33
3.2114 Flannelboard & Cutouts, Yarn
3.2115 Children
3.2116 Objects in Classroom

3.212 Students Resources

3.2121 MacMillan Charts 25-30
3.2122 Heath Manipulative Kit Multilink Cubes
3.2123 Hoffman Viewer 303-26, 303-30, 304-31-33
3.2124 Flannel Board & Shapes, Yarn
3.2125 Scizzors, Paste, Crayons, Pencils, Bottlecaps, Beads & Strings, Blocks
3.2126 Drawing Paper, Magazines

3.213 Activities

3.2131 Students will match sets of three circles and four squares on the flannelboard by one-to-one correspondence. She will tell which set has more, how he knows this and how many more it has. He will answer question, "Is 4 more than 3?"

3.2132 Ten students have card with a set of large dots on it 1-10. A student with a set of 1 is asked to come up to the front. Question is asked, "Who has a set with one more than the set of one?" This child comes up and stands next to other child. Continue in sequential order until all 10 cards are used.

3.2133 Students will use bottle caps and make a set teacher specifies. Then a set with one more and a set with one less. Repeat several times.

3.2134 Student will put one block down in front of him. Teacher will ask, "put down one more block". and then ask how many. Continue until 10 is reached.

3.2135 "Clapping Game". Students will clap one more or one less than the amount teacher claps.

3.2136 Students will play "Musical Chairs" and discuss one less chair than children, one more child than chairs.

3.214 Evaluation

3.2141 Given a set of objects the student will construct a set with one more than the given set, and a set with one less than the given set.

3.2142 Given a pack of "Set Cards" (sets of 1-5), the student will arrange them in "one-more order."

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of qualitative relationships.

4.1 Affective Objectives

4.11 The child will become aware that some sets in his environment have more elements than others and will begin to appreciate the fact that more and less are important to him when he is making certain choices.

4.12 The child will become aware of the concept that when two sets cannot be matched by one-to-one correspondence, one set has more and one set has less.

4.13 The child will increase his awareness of the concept of conservation of number and will begin to realize that when two sets are arranged in two lines, the longer line does not necessarily have more elements in it.

4.2 Cognitive Objectives

4.21 The child will understand the concepts of comparison in regard to more than, less than, as many as.

4.22 The child will use one-to-one correspondence to match sets and tell which set has more, less or just as many.

4.211 Teacher Resources

4.2111 Hoffman Viewer Manual, 303, 23-25, 302-26, 302-12-23
4.2112 Heath Teachers Manual, 21a, 21-30- T17-18
4.2113 MacMillan Chart Guide pg. 18-19
4.2114 Hap Palmer Math Readiness Record, "Make a Set", and "Show Me a Card"
4.2115 Flannel Board & Cutouts
4.2116 Blocks, Children, Objects in the classroom

4.212 Student Resources

MacMillan Charts #17
Heath Workbook pg. 21-30
Hoffman Viewer
Multilink Blocks, Objects in Classroom
Flannel Board & Cutouts
Hap Palmer Math Readiness Record
Books & Stories

4.213 Activities

4.2131 Student will fold 12" x 18" newsprint into quarters. Teacher will make a set on the chalkboard. Child will draw a set in the first box that has more elements in it than the teacher's set. Repeat in box 2 and 3 with a set that has less or just as many as teachers set.

4.2132 All the students wearing tie shoes will stand in a group. All the children not wearing tie shoes will form another group. One child will be picked to match children in the sets to see which set has more and which one has less. All children will discuss what has happened.

4.2133 Teacher will jump three times. Students will jump as many times as the teacher. Can do hop, skip, etc.

4.2134 Student will have two boxes (identical) with different amounts of dices in them. Children will guess which box has the most and then match them to see if he was correct.

4.2135 Students will play and "pick the set with more" on the Flannelboard. Two sets will be arranged in lines and child must pick set with more and then match to show he is correct. Repeat this activity often in varied ways.

4.214 Evaluation

4.2141 Given 10 blocks, 6 red and 4 blue, child will make a set of 6 red blocks and a set of 4 blue blocks. He will point out the set with more and the set with less. He will match one-to-one in answer to the comment, "prove it".

4.2142 Given a set of objects, student will be able to construct a set that has just as many elements.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of quantitative relationships.

5.1 Affective Objectives

5.11 The child will be exposed to the underlying concepts of addition and subtraction.

5.12 The child will become aware of the idea that two sets of objects can be joined to create a new set.

5.13 The child will begin to appreciate the relationship between sub-sets and the whole.

5.14 The child will be introduced to the idea of the commutative property of addition with concrete experiences.

5.15 The child will be exposed to the idea of the separation of a set resulting in less members in the original set.

5.2 Cognitive Objectives

5.21 Students will join two sets of concrete objects to make a new set.

5.22 Students will partition a set into two sub sets and then rejoin them into the whole. Student will discuss what has happened in numerical terms.

5.23 Students will experience through working with concrete objects the idea that the order in which two sub-sets are joined does not change the number of the whole.

5.24 Students will explore the idea of subtraction by taking away objects from a set and then answering the question, "How many are left?"

5.25 Students will be able to discuss what has happened in subtraction in numerical terms.

5.251 Teacher Resources

5.2511 Heath Teachers Manual, 123a 123-126
5.2512 MacMillan Chart Guide, (Extension Activities) 20-32
5.2513 Hoffman Viewer Teachers Manual, 305-41 & 42, 305-44-48
5.2514 Heath Kit Resource Book pgs. 33, 35
5.2515 Flannel Board & Flannel Cutouts
6.2516 Classroom objects & children

5.252 Student Resources

5.2521 Heath Workbook, 123-126
5.2522 Hoffman Viewer, 305-41 & 42, 305-44-48
5.2523 Fingerplays (i.e. "Five Little Chickadies")
5.2524 Hap Palmer Record, Learning Basic Skills through Music, "Number March".
5.2525 Heath Manipulative Kit Multilink Blocks
5.2526 Blocks
5.2527 Dominos
5.2528 Wooden Beads
5.2529 Flannel Board & Cutouts
5.2530 Walk-On Number Line
5.2531 Stepping Stones
5.2532 Peg Board & Pegs
5.2533 Spotty Dog Game
5.2534 Games using dice

5.253 Activities

5.2531 Students will be given two medium size and one large paper circle. They will make a set of 3 bottle caps on one small circle, 2 bottle caps on the other small circle. Children will enumerate how many bottle caps in one set and then the other. Children will then put all the bottle caps on the large circle and will count how many. They will discuss with teacher how their sets of three and two together make a new set of five.

Part II of Students activity: Repeat process except they use a set of two and three to make a new set of five for the purpose of exposure to commutative property.

5.2532 Students will work at flannelboard. They will form a large set of six objects. They will take turns finding different ways to separate the set into two sub-sets. Each time they will describe the two sub-sets they have made they will put the sub-sets into the whole again and describe the activity.

5.2533 During time teacher is taking attendance children will make two sets on the chalkboard with Tally marks - one of the boys absent and one of the girls absent. A large circle will be drawn. Child will count the number of tally marks for the boys absent and draw that amount of tally marks in the big circle. The same will be done with the number of tally marks in the set of girls absent. The set of children absent will be counted.

5.2533 Students will listen to a story told by the teacher about the teacher and 6 children taking a walk. Teacher leaves 2 children at the ice cream store and then asks, "How many children continue on the walk?" Teacher drops off one more and then asks, "How many children on the walk?"

5.2534 Students will use pegboards & pegs. They will make a set of six pegs, three red and three blue. Children will pretend that pegs are candles on a birthday cake. They pretend to blow out three red candles. They remove the red pegs from the board. Then they answer the question, "How many candles are left?"

5.2535 Students will use Walk on Number Line and walk to the number 2. They will walk two steps forward and tell what number they are on. (4) Then they will walk backwards 3 steps and tell what number they are on.

5.254 Evaluation

5.2541 Child will construct two sets. He will say the number of objects in each set. He will put sets together, count them & tell how many. He will tell what he has done.

5.2542 Child will fold 12" x 18" manila paper into quarters. He will make five large dots in each box. He will take a pack of Domino Cards (paper), divided; 1 & 4, 4 & 1, 3 & 2, 2 & 3, 4 & 2 and 3 & 1. He will paste a domino totalling five in each box.

5.2543 Child will make a set of three chicks and five eggs and will tell how many things are in his set. He will take away three chicks and tell how many things he has left in his set.

5.2544 Child will make a set of three and a set of two blocks. Child will count the two sets together and say there are 5 blocks. Teacher will then turn the two sets around so the set of 2 is first, and 3 second. Teacher will ask child to count sets together. Child will answer 5. Teacher will then ask, "Does it matter if we count the set of three first and 2 second or the set of two first and the set of 3 second. Child will answer "no".

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

IV. Goal - The child will develop concepts of quantitative relationships.

6.1 Affective Objectives

6.11 The child will develop an awareness of the relationship of parts to the whole.

6.12 The child will be introduced to the concept that when a whole is divided into equal parts, the parts can be put together again into the whole.

6.13 The child will begin to appreciate the fact that a whole divided into two equal parts creates halves and that a whole divided into four equal parts creates quarters.

6.2 Cognitive Objectives

6.21 The child will be able to identify the fraction half.
6.22 The child will use the appropriate vocabulary for halves and quarters of a whole.
6.23 The child will be able to divide sets of concrete objects in half according to number.
6.24 The child will be able to fold a paper in half and in quarters.
6.25 The child will be able to draw a line and divide geometric shapes in half.
6.26 The child will be able to reconstruct the parts into the whole.
6.27 The child will be able to compare halves and quarters of shapes in relation to same size and same shape.

6.211 Teacher Resources

6.2111 Flannelboard & Flannel Cutouts
6.2112 Chalkboard
6.2113 Paper, crayons, scissors
6.2114 Objects in classroom that can form sets to be
6.2115 Students
6.2116 Heath Kit Manual, 24, 41, 59, 64

6.212 Student Resources

6.2121 Paper
6.2122 Pencils, Crayons, Scissors
6.2123 Clay
6.2124 Water & Sand
6.2125 Cups & Jars
6.2126 Milk & Snacks
6.2127 Wooden Fruit Set divided into halves & quarters

6.2128 DLM shape puzzles divided into halves & quarters
6.2129 Cuisenaire Rods

6.213 Activities

6.2131 Have children fold a 12" x 18" piece of newsprint in half. Crease, Trace resulting line. Cut on line. Teacher and children discuss that the result is two halves. Children put one half on top of the other and talk about same size, shape. Children put shapes back together and discuss results.

6.2132 Children are given a piece of colored paper with four shapes dittoed on it. A dotted line goes down the middle of each shape. Children cut out each shape. They trace the line down the center of one shape. Cut on the line. Tell what they have done and what result is (2 halves) then compare halves. Do the same with the other three shapes. Then children mix up all of the shapes. Children find matching halves and put them together into the whole figure.

6.2133 Two children will divide the rest of the class into two equal groups (in half) by one to one correspondence. They will discuss what they are doing. They will then count each group (teacher included if sets unequal). The two children say how many in their group. Teacher says, "point to the half of the class you will get milk for." Please go down and get half the milk the class will need today.

6.2134 Children will roll clay into a long "snake" and will then estimate and divide it in half. Children re-roll clay and divide "snake" into quarters.

6.2135 Students will divide circle in half by tracing a line from top to bottom; then into quarters by tracing a line across. Discussion using appropriate vocabulary follows.

6.214 Evaluation

6.2141 The child will fold a square in half, cut it in half and say that he has cut a square in half.

6.2142 Student will draw a line dividing a circle and a square in half. He will point to half of the circle or square as teacher directs.

6.2143 Student will color in half of a partitioned triangle, rectangle & circle.

6.2144 Given a set of blocks, the children will divide the set in half according to number.

6.2145 Given a circle divided into quarters the child will say that the circle is divided into 4 parts upon teacher questioning and will call the parts quarters.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

V. Goal - The child will develop concepts of qualitative relationships.

1.1 Affective Objective

1.11 The child will begin to appreciate the difference in size, weight and quantity in relation to objects, people and animals in his environment and begin to be aware of how they affect him.

1.2 Cognitive Objectives

1.21 The child will be able to compare the size of two objects on the basis of the attributes of: big-little, large-small, same, long-short, tall-short, thick-thin.

1.22 The child will be able to compare the weight of two objects in terms of light and heavy.

1.23 The child will be able to compare the quantities, full and empty.

1.211 Teacher Resources

1.2111 Flannelboard & Cutouts
1.2112 Children and miscellaneous objects in classroom.
1.2113 Hoffman Viewer Manual, 301-02,09; 302-0, 19, 11-14, 27; 303-23-29, 304-31-34, 37.
1.2114 MacMillan Charts, #'s 13, 16, 7-12
1.2115 MacMillan Teacher Guide #1, 38, 66, 70, 72, 74, 84, 92, 109, 137-39, 165-68, 160
1.2116 MacMillan Teachers Guide #2, 25-26, 55-56, 62, 65, 81, 84, 137, 139, 158-60.
1.2117 Heath Manipulative Kit, 24, 31, 33-34, 41, 52, 54, 59, 64.
1.2118 Heath Math Teacher's Guide, T18, 2, 5, 7, 9, 51a, 61-69.

1.212 Student Resources

1.2121 Objects in the environment such as: blocks, pencils, scissors, beads, rulers, crayons, paper, books, string, clay and other children.
1.2122 Water and Sand
1.2123 Set of scales - bathroom scale
1.2124 Hoffman Viewer, 301, 02, 09; 302-0, 11-14, 19, 27; 303-23-262-29; 304-31, 34, 37.
1.2125 Attribute Blocks & Multilink Cubes from Heath Manipulative Kit.
1.2126 MacMillan Charts, #'s 7-13, 16

1.2127 Heath Workbook, 2, 5, 7, 9, 61-69
1.2128 DLM Graduated Cylinders

1.213 Activities

1.2131 One student will draw a circle on the chalkboard. Next student will draw a bigger circle. Next child draws a triangle - next child draws a small triangle.

1.2132 Student will be asked to remove the biggest ball from balls of different sizes spread out on rug. Another child will remove smallest ball. Continue until all balls are gone.

1.2133 Five students will line up. Another student will arrange them tallest to smallest. Five other children will be chosen and arranged smallest to tallest by another student.

1.2134 Students will put three thick crayons on one side of the scale and three thin crayons on the other side and will decide which is heavier. Student will then add as many thin crayons as necessary to balance scale.

1.2135 Students will classify attribute blocks according to thickness-thinness.

1.2136 Students will use different cups, jars and containers when playing with sand and water and experience filling & emptying the containers.

1.2137 Students will cut out a tracing of one of their shoes and then arrange them, small to large on a long sheet of paper.

1.2138 Students will weight & lift many objects.

1.214 Evaluation

1.2141 Given 30 colored-inch cube blocks, the child will build a tower using five of them. He will then build a tower that is taller. He will point to and say which one is taller. He will put all the blocks in a pile again and build a tower using 10 blocks and will then build one that is shorter and point to and say which is shorter.

1.2142 The child will roll a long clay "snake". He will then roll one that is short and place it beside the first snake and then point to the larger and smaller snake. He will make a short snake and then roll one that is longer.

1.2143 Using attribute blocks the child will select from an array of blocks that are the same color, shape and size but of different thickness, all the thick blocks and put them in one "set ring", and put all the thin blocks in another "set ring" and describe what he has done using appropriate vocabulary.

1.2144 The child will sort an array of objects which are significantly different in weight into two sets; heavy and light. He will do that by holding two objects at a time in his hands and judging their weight.

1.2145 Given 5 jars, three full of sand and two empty, the child will touch the jars that are full or empty under teacher direction and will then pick a jar himself and tell whether it is full or empty.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

V. Goal - The child will develop concepts of qualitative relationships.

2.1 Affective Goals

2.11 The child will develop an increasing awareness of the way time relationships influence and regulate his behavior.

2.12 The child will begin to develop a sense of time duration related to change, such as; yesterday, last week, next year, the seasons.

2.13 The child will be aware of nightime and daytime.

2.14 The child will develop a feeling for the passage of time and begin to "sense" lengths of time.

2.15 The child will be aware of the unchangeable sequence of the days of the week.

2.2 Cognitive Objectives

2.21 The child will be able to distinguish between events that happen during daytime and nightime.

2.22 The child will be able to describe the seasons in terms of clothing, activities and weather and events in nature.

2.23 The child will be able to relate events to time such as yesterday, tomorrow.

2.24 The child will be able to say the names of the days of the week.

2.211 Teacher Resources

2.2111 Hoffman Viewer Manual 302-19 & 20
2.2112 Heath Teachers Guide, 89-94, T29
2.2113 Weather Forecast
2.2114 Weather Chart
2.2115 Calendar
2.2116 Experience Charts
2.2117 Students Discussion Groups
2.2118 Picture File
2.2119 MacMillan Lang. Read & Tell Bk.
2.2120 MacMillan Read & Tell + 1 & 2 Teacher Guides pg. 217-221 & 131-134
2.2121 Birthday Chart
2.2122 Filmstrips

2.212 Student Resources

2.2121 Heath Workbook pg. 89-90
2.2122 Enrichment Sheet #30
2.2123 Hoffman Viewer, 302-19 & 20, Do & Discover Sheets 302 & 19 & 12
2.2124 Calendar
2.2125 Weather & Birthday Charts
2.2126 Judy Puzzles
2.2127 MacMillan Seasonal Puzzles - Big Jigsaw Puzzle
2.2128 Instructo Weather Flannelboard & Tape Kit
2.2129 Songs - "This is the Way We Wash our Clothes"

2.2131 Activities

2.2131 Give each child a piece of newsprint. Child will fold it in half crease and trace line. He will draw a scene depicting daytime on one side and nightime on the other side.
2.2132 Students will cut out pictures of weather, clothing activities, etc. from magazines that depict the different seasons and make seasonal books.
2.2133 Students will participate in calendar activities involving days of the week, month - Today - yesterday, tomorrow, etc.
2.2134 Students will participate in group discussions about what happened yesterday, what they will do at school today & tomorrow.
2.2135 Students will make & use their own calendars each month.
2.2136 Children will take observation walks to note the changes in the seasons.

2.214 Evaluation

2.2141 The child will say the days of the week in order.
2.2142 The child will point to pictures that depict an aspect of the different seasons, upon direction of teacher, and will look at a picture and tell the name of the season it exemplifies.
2.2143 On certain days the child will state that tomorrow is "chocolate milk day", and yesterday was boy's "Show & Tell Day".
2.2144 The child will correctly put in sequence a puzzle that shows morning to night by activities.

MILLER SCHOOL

KINDERGARTEN MATHEMATICS

Course of Study

V. Goal - The child will develop concepts of qualitative relationships.

3.1 Affective Objectives

3.11 The child will begin to develop an awareness of "cost".
3.12 The child will be exposed to the relative worth of a nickel and a dime, relating to the fact that although a nickel is larger it does not buy as much.
3.13 The child will be exposed to the fact that other units of money can be expressed in terms of pennies.
3.14 The child will begin to realize that money is used to buy things a person wants.

3.2 Cognitive Objectives

3.21 The child will identify a penny, nickel, dime, quarter, and dollar bill.
3.22 The child will understand that an item for sale has a definite, not an arbitrary price.
3.23 The child will recognize the cent sign.
3.24 The child will be able to give the value of a nickel and a dime in terms of pennies.
3.25 The child will be able to tell the value of a small number of pennies.
3.26 The child will be able to select a certain number of pennies to make a given amount of money.

3.211 Teacher Resources

3.2111 Heath Teachers Manual, 89a, 95-102
3.2112 Hoffman Viewer Manual 305-41
3.2113 MacMillan Word Picture Cards (1-28, 1-64, 1-72, 1-74)
3.2114 Real Money

3.212 Student Resources

3.2121 Heath Workbook pgs. 95-102
3.2122 Heath Enrichment Worksheets #34 & 33
3.2123 Hoffman Viewer, 305-41, Do & Discover Booklet, See & Do Page
3.2124 Edu-Card Game, "What's My Number Solitaire"

3.2125 Playstore, Cash Register, Articles to sell, real money
3.2126 Paper, pencil, crayons, scissors for price tags
3.2127 Teacher-Made money value pattern cards

3.213 Activities

3.2131 Students will play store using real pennies
3.2132 Each student will be given a nickel, a dime & ten pennies. Teacher will hold up an object with a price tag on it. Students will count amount of money needed to buy item.
3.2133 Given a box of coins, students will sort them out.
3.2134 Using teacher-made value cards as patterns, students will form matching sets using pennies, nickels & dimes.
3.2135 Ten students will play. Nine children will be given a card with a price tag from 1¢-9¢ on it. The child who is it uses pennies to make a set. Child who has correct price tag holds up his card and then he becomes "it".

3.214 Evaluation

3.2141 The child will point to different coins or dollar bill as teacher directs.
3.2142 The child will say the name of the coin when teacher touches it.
3.2143 When shown a card with a numeral and cent sign on it, the child will use pennies to make a set of the correct value.
3.2144 The child will look at a set of pennies and say its value using the cent term.
3.2145 When shown a nickel and a dime, the child will use pennies to make a set of equal value.

KINDERGARTEN

MATHEMATICS READINESS

SUPPORT MATERIALS

II. The child will understand basic concepts in numeration.

A. Books

1. Booth, Raintree Spotlight Series, 5 titles.
2. Carle, Very Hungry Caterpillar
3. McNaughton, ABC and 1-2-3
4. Pienkowski, Numbers
5. Wildsmith, Brian Wildsmiths 1, 2, 3
6. Wolff, Let's Imagine Numbers

B. A-V Materials

1. Five Chinese Brothers
2. One Wide River to Cross
3. One Was Johnny

III. The child will recognize basic shapes.

A. Books

1. Charles, Calico Cat Looks Around.
2. Hoban, Circles, Triangles, Squares.
3. Pienkowski, Shapes.
4. Reiss, Shapes.
5. Sesame Street, Sesame Street Book of Shapes.
6. Supraner, Draw me a Square, Circle, Triangle.

B. A-V Materials

1. Changes, Changes
2. Billy Blob Visits Shape Land

IV. The child will develop concepts of quantitative relationships.

A. Books

1. Adams, This Old Man.
2. Alan, Count With Me.
3. Brychta, Numbers 1 to 10 and Back Again.
4. Hall, Captain Murphy's Tugboats.
5. Mack, 10 Bears in My Bed.
6. Murray, Addition Made Easy.

B. A-V Materials

1. One Was Johnny
2. Over in the Meadow
3. Three Billy Goats Gruff

V. The child will develop concepts of qualitative relationships.

A. Books

1. Hoban, Push, Pull, Empty, Full
2. Pienkowski, Sizes
3. Poulet, Blue Bug's Safety Book
4. Ruben, What is New, What is Different, What is Missing.
5. Spier, Fast, Slow, High, Low
6. West, Talkabout Ladybig series

B. A-V Materials

1. Big Dog...Little Dog
2. Seuss, The Foot Book
3. Seuss, Ten Apples Up on Top

CORRELATION OF

KINDERGARTEN SCOPE & SEQUENCE

TO PURCHASED MATERIALS

II.	Manipulative Kit (Page)	MacMillan Charts (Lesson)	Heath (Lesson)	Hoffman (Unit)	Workjobs Games
1. 1 to 1 correspondence	28,32	18	T17, 3, 4	303-22	
2. rote count from 0-20	32	31	T19, T20,3,4	305-44	
3. count objects 0-10	8, 67	18-22	T19, T20	305-44	
		26-30	3, 4, 6		
4. recognize numerals 0-12	51	18-22		304-31	
		26-30	4, 6	305-44	
				304-32	
5. reproduce numerals 0-9			8		
6. first, second, third		14	T21, 4, 7	301-02	
7. numeral, number, word		18-22	8		
		26-30			
8. order sets & numerals		25, 31	T21, 4	302-12	
				302-13	
9. charts and graphs		15	Readiness		
			Units		
10. 2's, 5's and 10's					
III.					
1. Recognize ○ △ □ ▱	7, 12-13,	7,8,9,11	T12, T23,	301-08,	
⬭ ◇	14-15		T24, 2,5	302-15,	
				302-16,	
				303-30	
2. Reproduce ○ △ □ ▱					
⬭ ◇					
3. Draw curved, straight lines					
4. Concept of curved, straight lines	10-11			303-30	

IV.	Manipulative Kit	MacMillan Charts	Heath	Hoffman	Workjobs Games
1. number of objects in sets	8,28,21,67	130-179	3,4	302-21 302-20	
2. empty sets					
3. one more, one less		195-211	T18,3	302-12	
equal to,				302-12/23	
less than				302-24/25	
4. greater than		195-211	T18, T20,3	302-26, 302-27	
5. addition & subtraction	33,34,52,53 54	195-211	9		
6. parts of the whole	24,41,59,64				
V.					
1. compare size & weight	31	#3, #16 215-237	2,5	302-0	
2. develop concepts of time			T28, 7	302-19	
3. 1¢,5¢,10¢,25¢, $1 bill			7		

AURORA CITY SCHOOLS

KINDERGARTEN MATH ADOPTION

June 1979

Procedure: The Kindergarten Math Program was defined by program goals and, more specific, objectives. These objectives were then further defined by a scope and sequence. Consideration of Aurora City Schools Kindergarten Philosophy, the diverse population of stydents, the organizational design, child development and learning styles were all assessed in establishing the scope and sequence. (see Appendix A)

Seven publishing companies were invited by Dr. Cogar to make presentations to the committee. Gould, MacMillan, Addison-Wesley, Holt Rinehart, Harcourt Brace, Jaconovich, Heath, and SRA materials were all presented. A broad based, evaluation form assisted committee members in evaluating each publisher's program. (see Appendix B) The diversity of materials provided us with a difficult task of selection.

To assist in the final selection, narrower criteria were defined.

Scope and Sequence was considered.

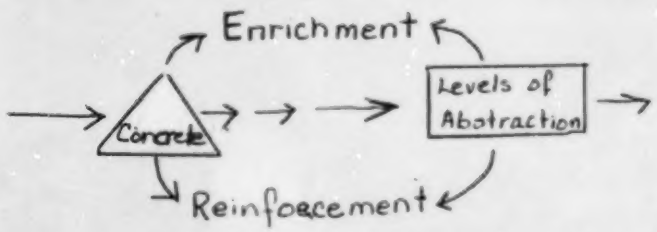
1) Did the publisher's scope and sequence parallel Aurora's Kindergarten Math Scope and Sequence?

2) Was the scope complete? (i.e. did it cover all necessary topics)

3) Could teacher's adequately supply additional lessons where programs were not as exclusive as our program goals.

Learning Modes were considered.

1) The following learning model symbolized the variety of learning modes necessary to meet Aurora's kindergarten students' needs.



All math concepts should be introduced in concrete ways first (example: counting number of children at a table.) After the concrete learning is mastered the child is able to move to various levels of abstraction. (examples: 1) counting pictures of girls 2) counting by pointing to numerals 3) being able to draw 3 girls). Within this concept various horizontal levels can also be provided. Thus, one child may be able to concretely count to 100 (enrichment) while another will need to touch the item to count it (reinforcement).

Program needs were considered.

Aurora's Kindergarten Program is basically child centered but teacher directed. Individual needs can be met by varying teaching style (auditory, visual, tactical) and by flexibility in grouping. Thus, individual, small group, and total group activities will take place at various times throughout the year. Also about 50% of Aurora's kindergarten children come to school with one or more years of pre-school. So we must address the issue of various levels of readiness.

Services were also considered.

1) Did the publisher provide inservice?
2) Did the publisher have parent programs?
3) Did the publisher provide consulting services to tie program to Aurora's scope and sequence?

Based on this rather exhaustive consideration, and after hours of deliberation and study the committee unanimously recommends the following:

1) Heath Workbooks and Teacher Books

   Use: Total Group
   Core to math program

2) Heath Enrichment Masters

   Use: Small group enrichment activities

3) Heath Manipulative Kits and Resource Book

   Use: Small group concrete experiences

4) Heath Parent Involvement Kit

   Use: To inform parents of classroom activities as applies to the core unit

5) MacMillan Charts and Teachers Manual

   Use: Total group language arts math experiences as well as small group reinforcement activities.

6) Addison-Wesley Workshop Book I
   " " Teacher's Book
   " " Parent Book

Use: For the "play" experiences of kindergarten, small group activities, concrete experiences. Parent involvement in a to-do-at-home way.

7) Hoffman Viewer

Use: Auditory visual media approach for children with special learning difficulties, tie in the language arts, reinforcement or enrichment.

We feel these recommendations, while extensive, provide the flexibility, versatility, and capability for providing for the following excellence in lesson development.

1. Concrete Experiences ("HANDS-ON")
2. Large Group Presentation with Chart (Concept and Language Development)
3. Workbook Activity (2nd Level of Abstraction)
4. Extension for some (Work jobs, Hoffman view or Worksheet)
5. Reinforcement for some (see extension).

With the adoption and implementation of this recommendation, the committee feels a first rate Math Readiness Program will exist in Aurora City Schools.